

Name \_\_\_\_\_

## Recording Measurements

**Objective:** The purpose of this exercise is two-fold. It is designed to supply proper use of laboratory instruments scaled in the metric system, as well as, the recording of accurate and precise measurements.

### Pre-Lab Questions

Define the following terms:

Accuracy -

Precision-

### Procedure

#### *Part A: Length*

1. Using a small metric ruler, record the thickness of a single staple. Make this measurement to the nearest fraction of a mm (in decimal form.) \_\_\_\_\_
2. How precise is this instrument in mm, why? \_\_\_\_\_
3. Obtain a group of staples. Count and record the number of staples in the group \_\_\_\_\_
4. Without measuring it, use the length of a single staple (#1) to estimate the length of the group staples you counted (#3). **Show your work.** \_\_\_\_\_
5. Now measure the group of staples to the nearest mm. \_\_\_\_\_
6. How do the answers in #4 and #5 compare? Why is this so, explain? \_\_\_\_\_
7. Measure your height in meters using a meter stick. \_\_\_\_\_
8. Convert this measurement to mm, cm, and km. **Show your work.**  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Part B: Volume**

1. Calculate the volume of your textbook in cubic centimeters ( $\text{cm}^3$ ). **Show your work.**

\_\_\_\_\_

2. Convert the volume of your textbook to  $\text{mm}^3$ . **Show your work.**

\_\_\_\_\_

3. Half fill your 25 mL graduated cylinder with water. Record the volume.

\_\_\_\_\_

4. Now place a piece of glass rod into the graduate. Record the new volume.

\_\_\_\_\_

5. Using your answers to #4 and #5, calculate the volume of the glass rod.

\_\_\_\_\_

**Part C: Mass**

1. Using a balance, record the mass of a watch glass

\_\_\_\_\_

2. How precise is this instrument? Explain why.

3. Place a penny on watch glass and record the mass of both objects.

\_\_\_\_\_

4. Calculate the mass of the coin. Show your work

\_\_\_\_\_

5. Mass the penny separately on the balance without the watch glass.

\_\_\_\_\_

6. How does the mass of the penny in #4 and #5 compare? Are they close? Is using steps #1, #3, and #4 a reasonable method in determining the penny's mass? Why, why not?

**Part D: Temperature**

1. Read and record the temperature of a sample of water on each of the thermometers.

Thermometer A: \_\_\_\_\_

Thermometer B: \_\_\_\_\_

2. What would be the best answer for reporting the temperature of the water? Show your work. How did you arrive at this answer?

3. How precise are these thermometers? Explain.